Teacher's Scoring Guide

Mathematics
Applied Skills Assessment

Spring 2006
Graduation Qualifying Exam Retest

Indiana Statewide Testing for Educational Progress

47982

INTRODUCTION

The *ISTEP+* GQE Retest was administered during the spring of 2006 to students who entered high school (Grade 9) after August 2003. This gave students another opportunity to pass the graduation qualifying examination. The GQE Retest consisted of two parts: (1) a multiple-choice section and (2) an applied skills section. Each part included two content areas (English/Language Arts and Mathematics). Students completed only the content area(s) of the test on which they did not previously meet the Indiana Academic Standards. The multiple-choice section of the GQE Retest was machine-scored. The applied skills section, which consisted of open-ended questions and a writing prompt, was hand-scored in Indiana during March and April 2006.

The results of both the multiple-choice section and the applied skills section were returned to the schools in May 2006. Copies of imaged student responses in the applied skills section were also returned to the schools in May 2006. It is the Indiana Department of Education's expectation that schools will take this opportunity to invite students and parents to sit down with teachers to discuss the results. To help in this process, the Indiana Department of Education has prepared the following *Teacher's Scoring Guide.* The purpose of this guide is to help teachers

- understand the methods used to score the GQE Retest Applied Skills Assessment, and
- discuss and interpret these results with students and parents.

In order to use this guide effectively, you will also need the Student Report and the imaged copy of the student's work.

For the GQE Retest, there are two scoring guides: English/Language Arts and Mathematics. In this Mathematics guide, you will find

- an introduction,
- a list of the Mathematics Grade 8 and the Algebra I Indiana Academic Standards,*
- rubrics (scoring rules) used to score the open-ended questions,
- anchor papers that are actual examples of student work (transcribed in this guide for clarity and ease of reading), and
- descriptions of the ways in which the response meets the rubric criteria for each of the score points.

When you review the contents of the scoring guide, keep in mind that this guide is an overview. If you have questions, write via e-mail (istep@doe.state.in.us) or call the Indiana Department of Education at (317) 232-9050.

* The Mathematics academic standards assessed in the GQE Retest are a combination of the Grade 8 Mathematics and the Algebra I standards that were adopted in September 2000.

INTRODUCTION TO THE MATHEMATICS APPLIED SKILLS ASSESSMENT

The Applied Skills Assessment in the GQE Retest that students took this past spring allowed students to demonstrate their understanding of Mathematics in a variety of ways, such as using a ruler, explaining a solution, transforming a figure, or interpreting a table or graph.

STRUCTURE

The open-ended questions for the Mathematics Applied Skills Assessment were divided into two tests, Test 1 and Test 2. Each test consisted of eight open-ended questions. Students were permitted to use calculators on Test 2 but **not** on Test 1.

SCORING

Each open-ended question was scored according to its own rubric. A rubric is a description of student performance that clearly articulates the requirements for each of the score points. Scoring rubrics are essential because they ensure that all papers are scored objectively. Each rubric for the Mathematics portion of this administration of the GQE Retest had a maximum possible score of two or three score points.

NOTE: Images of the questions and student work have been reduced to fit the format of this guide. As a result, actual measures of questions will not be reflected.

Rubrics describe the requirements for each score point level. The number of score point levels possible varies according to the requirements of each activity. The performance criteria (requirements) comprising the rubrics were established prior to testing to ensure that all responses are judged objectively.

1. Students should not be penalized for omitting
   - degree symbols
   - dollar signs ($) or cent signs (¢)
   - zeros for place holders; for example, either 0.75 or .750 could be used
   - labels for word problems; for example, *miles*

     NOTE: Students WILL be penalized for use of incorrect labels.

2. Students should not be penalized for
   - spelling or grammar errors
   - using abbreviations; for example, *ft* or *feet* would be acceptable

3. Students should be given credit for
   - entries in the workspace that indicate understanding of a complete process even if the response on the answer line is incorrect (i.e., the student would receive partial credit for questions with rubrics that allow for scoring the work).
   - answers not written on the answer line; for example, an answer could be given in the workspace or in the explanation (however, in some cases, because of the multiple calculations in the workspace, placement of an answer on the answer line is necessary to determine which result the student intended). Students WILL be penalized for incorrect answers written on the answer line even if the correct answer appears in the workspace.

4. Graphs
   - Bar graphs may be horizontal or vertical.
   - The order in which the data in circle graphs are shown is NOT important.
   - Line graphs must show the line drawn.
   - Any width of a bar in a bar graph is acceptable.

CONDITION CODES

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No response/Refusal
B Illegible
C Written predominantly in a language other than English
D Insufficient response/Copied from text

MATHEMATICS GRADE 8
INDIANA ACADEMIC STANDARDS

- **Number Sense**
  Students know the properties of rational and irrational numbers expressed in a variety of forms. They understand and use exponents, powers, and roots.

- **Computation**
  Students compute with rational numbers expressed in a variety of forms. They solve problems involving ratios, proportions, and percentages.

- **Algebra and Functions**
  See the Algebra I Standards on the next page.

- **Geometry**
  Students deepen their understanding of plane and solid geometric shapes and properties by constructing shapes that meet given conditions, by identifying attributes of shapes, and by applying geometric concepts to solve problems.

- **Measurement**
  Students convert between units of measure and use rates and scale factors to solve problems. They compute the perimeter, area, and volume of geometric objects. They investigate how perimeter, area, and volume are affected by changes of scale.

- **Data Analysis and Probability**
  Students collect, organize, represent, and interpret relationships in data sets that have one or more variables. They determine probabilities and use them to make predictions about events.

- **Problem Solving**
  Students make decisions about how to approach problems and communicate their ideas. Students use strategies, skills, and concepts in finding and communicating solutions to problems. Students determine when a solution is complete and reasonable, and move beyond a particular problem by generalizing to other situations.

ALGEBRA I
INDIANA ACADEMIC STANDARDS

- ❑ **Operations with Real Numbers**
  Students simplify and compare expressions. They use rational exponents and simplify square roots.

- ❑ **Linear Equations and Inequalities**
  Students solve linear equations and inequalities in one variable. They solve word problems that involve linear equations, inequalities, or formulas.

- ❑ **Relations and Functions**
  Students sketch and interpret graphs representing given situations. They understand the concept of a function and analyze the graphs of functions.

- ❑ **Graphing Linear Equations and Inequalities**
  Students graph linear equations and inequalities in two variables. They write equations of lines and find and use the slope and *y*-intercept of lines. They use linear equations to model real data.

- ❑ **Pairs of Linear Equations and Inequalities**
  Students solve pairs of linear equations using graphs and using algebra. They solve pairs of linear inequalities using graphs. They solve word problems involving pairs of linear equations.

- ❑ **Polynomials**
  Students add, subtract, multiply, and divide polynomials. They factor quadratics.

- ❑ **Algebraic Fractions**
  Students simplify algebraic ratios and solve algebraic proportions.

- ❑ **Quadratic, Cubic, and Radical Equations**
  Students graph and solve quadratic and radical equations. They graph cubic equations.

- ❑ **Mathematical Reasoning and Problem Solving**
  Students use a variety of strategies to solve problems. Students develop and evaluate mathematical arguments and proofs.

Problem Solving is identified as a Process Skill in the Indiana Academic Standards. To ensure that the *ISTEP+* questions that assess this Process Skill are grade-appropriate and that the questions use skills that are contained in the standards, these questions are developed by including at least two different Indicators from Content Skills in addition to the Indicator from the Process Skill. Some of the Content Standards included in the Content Skills are Computation, Geometry, and Algebra. The additional Indicators may be from the same or different Content Skills.

NOTE: For the Process Skill questions, score points are awarded **only** for the Process Skill, not for the Content Skill associated with the question.

The Content Skills used for each of the Process Skill questions in the GQE Retest Applied Skills Assessment are shown in the following chart.

PROCESS SKILL QUESTIONS

Question	Process Skills (score points awarded)	Content Skills (score points **not** awarded) *Item may map to more than one indicator in a standard.*
Test 1		
5	Problem Solving	Algebra I, Geometry, Measurement
Test 2		
4	Problem Solving	Measurement, Computation
5	Problem Solving	Data Analysis and Probability, Computation
7	Problem Solving	Algebra I, Measurement, Measurement
8	Problem Solving	Algebra I, Measurement, Measurement

Test 1—Question 1: Algebra and Functions

1 Look at the system of equations below.

$$8x + 12y = 52$$
$$6 + 2x = 10$$

Solve the system of equations for x and y.

Show All Work

Answer $x =$ _____ , $y =$ _____

Exemplary Response:

- $x = 2, y = 3$

Sample Process:

- $8x + 12y = 52$
  $6 + 2x = 10$

  $2x = 4$
  $x = 2$

  $8(2) + 12y = 52$
  $12y = 36$
  $y = 3$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

Test 1—Question 1
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answers of 2 and 3. A correct complete process for finding the solution to the system of equations is shown but is not required. The response receives a Score Point 2.

SCORE POINT 2

1 Look at the system of equations below.

$$8x + 12y = 52$$
$$6 + 2x = 10$$

Solve the system of equations for x and y.

Show All Work

8x + 12y = 52
6 + 2x = 10
2x = 4
x = 2

8(2) + 12y = 52
16 + 12y = 52
$\frac{12y}{12} = \frac{36}{12}$
y = 3

Answer $x =$ 2 , $y =$ 3

Test 1—Question 1
Score Point 1

This response shows a correct complete process for finding the solution to the system of equations. However, the student shows an incorrect answer on the answer line for *x*. Therefore, this response receives a Score Point 1.

SCORE POINT 1

1 Look at the system of equations below.

$$8x + 12y = 52$$
$$6 + 2x = 10$$

Solve the system of equations for x and y.

Show All Work

12y + 8x = 52
6 + 2x = 10
-6 -6
$\frac{2x}{2} = \frac{4}{2}$ x = 2

12y + 8(2) = 52
12y + 16 = 52
-16 -16
$\frac{12y}{12} = \frac{36}{12}$
y = 3

Answer $x =$ 4 , $y =$ 3

SCORE POINT 0

1 Look at the system of equations below.

$$8x + 12y = 52$$
$$6 + 2x = 10$$

Solve the system of equations for x and y.

Show All Work

$8x + 12y = 52$
$8x + 12y - 12y = 52 - 12y$
$\frac{8x}{8} = \frac{40}{8}$

$2x + 6 = 10$
$2x + 6 - 6 = 10 - 6$
$\frac{2x}{2} = \frac{4}{2}$

Answer $x =$ 5 , $y =$ 2

Test 1—Question 1 Score Point 0

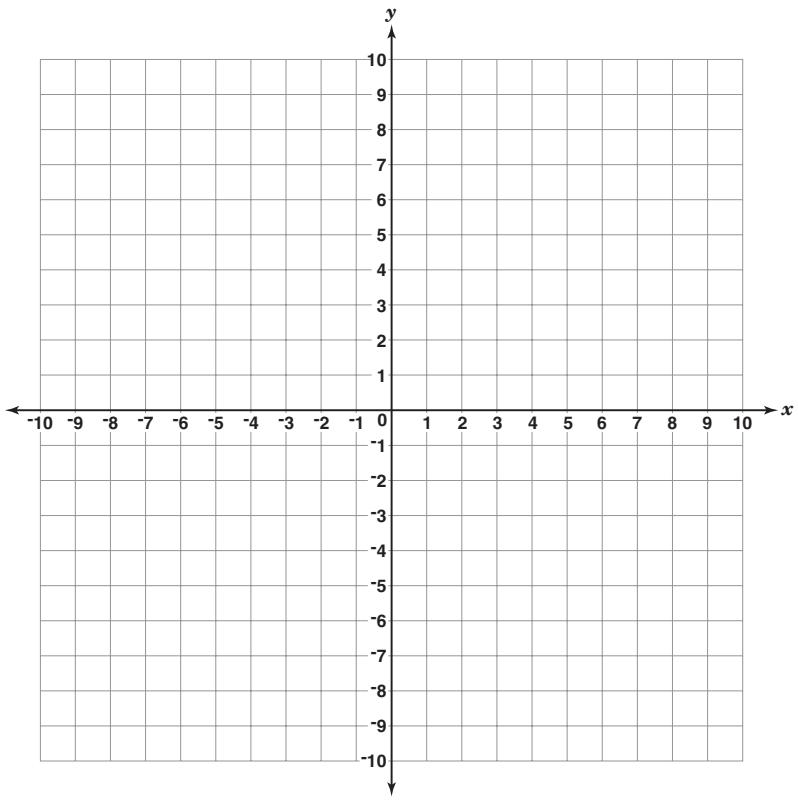
This response shows incorrect answers and an incorrect process. The student correctly solves for *x*, but incorrectly subtracts unlike terms in the equation $52 - 12y = 40$ when solving for *y*. Therefore, this response receives a Score Point 0.

Test 1—Question 2: Algebra and Functions

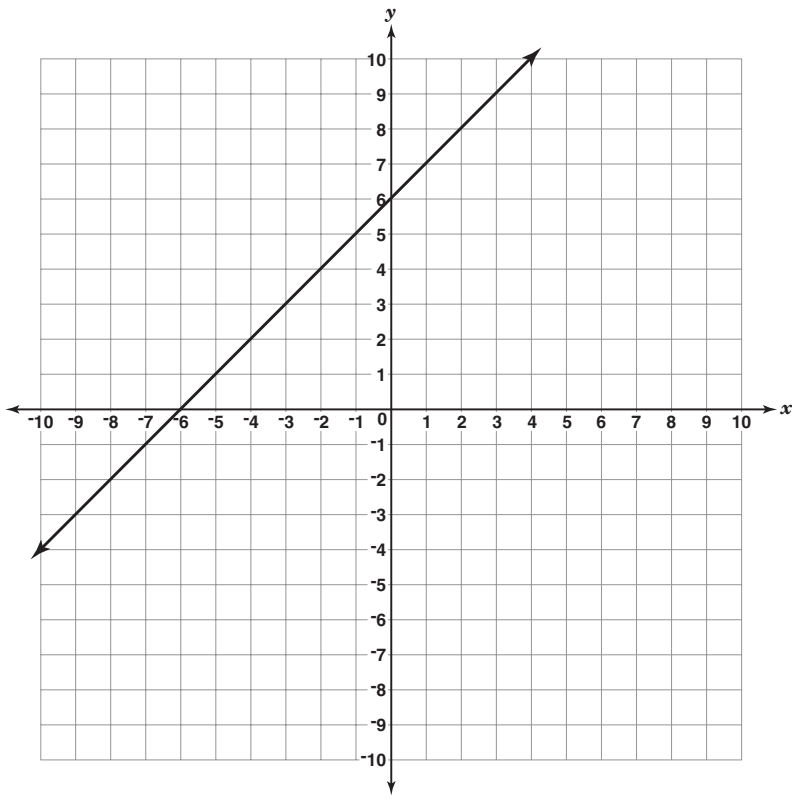
2 Look at the equation below.

$$y = x + 6$$

Graph the equation on the coordinate plane provided.



Exemplary Response:

- 

NOTE: If more than one line is drawn, a score of 0 points will be awarded.

If an incorrect point is plotted with no line drawn, a score of 0 points will be awarded.

Rubric:

2 points	Exemplary response
1 point	Correct slope of 1 with line drawn OR Correct *x*-intercept of $^{-}6$ or *y*-intercept of 6 with line drawn OR No line drawn, at least 2 points plotted that would fall on the correct line, and no incorrect points plotted.
0 points	Other

Test 1—Question 2
Score Point 2

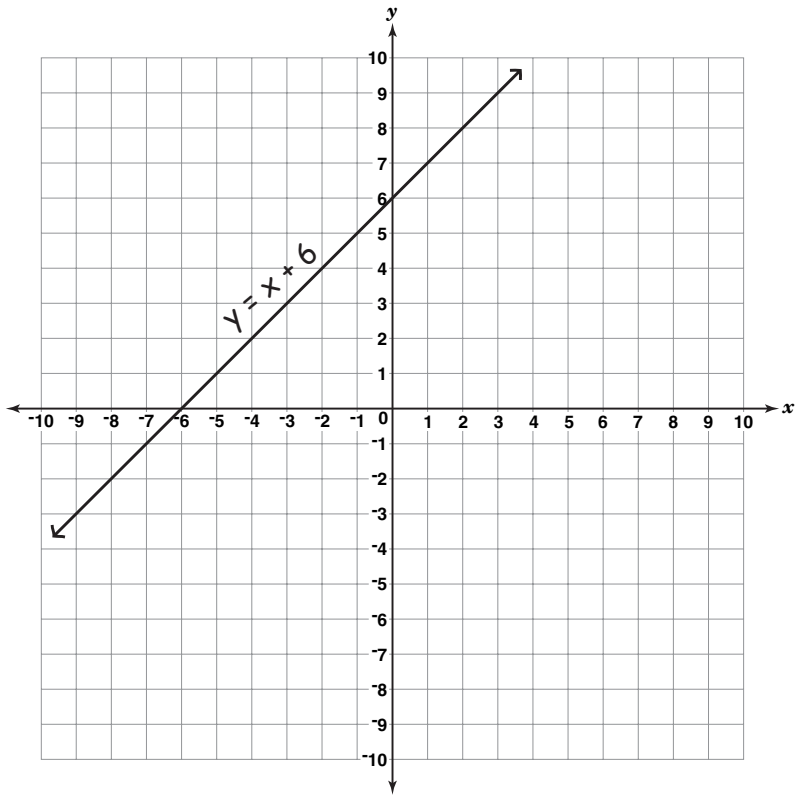
This response matches the exemplary response contained in the rubric. The student correctly graphs the equation showing the correct slope and correct intercepts. The response receives a Score Point 2.

SCORE POINT 2

2 Look at the equation below.

$$y = x + 6$$

Graph the equation on the coordinate plane provided.

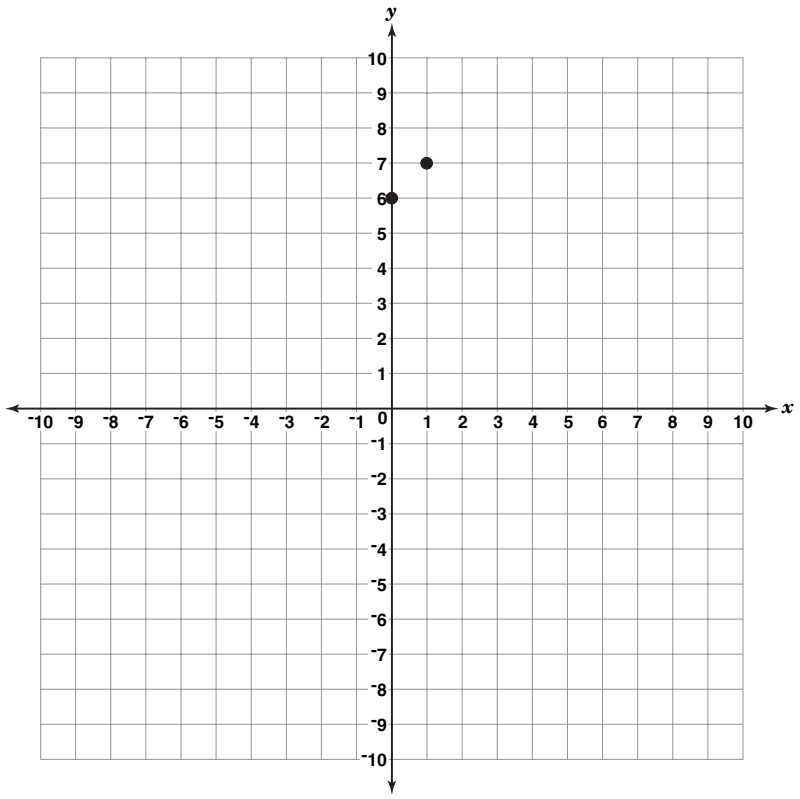


SCORE POINT 1

2 Look at the equation below.

$$y = x + 6$$

Graph the equation on the coordinate plane provided.



Test 1—Question 2
Score Point 1

This response shows an incorrect graph. The graph shows only two points plotted with no line drawn. If a line were drawn through the points, it would fall on the correct line. Therefore, this response receives a Score Point 1.

Test 1—Question 2
Score Point 0

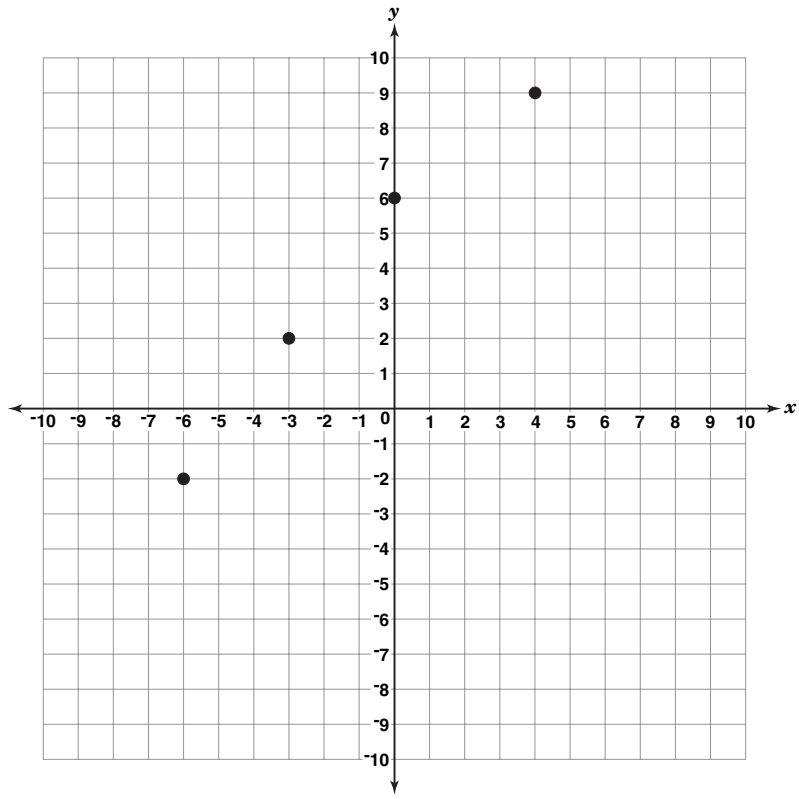
This response shows an incorrect graph. The points plotted do not all correspond to $y = x + 6$ and no line is drawn. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2 Look at the equation below.

$$y = x + 6$$

Graph the equation on the coordinate plane provided.



Test 1—Question 3: Algebra and Functions

3 In a free throw contest, Kate made twice as many free throws as Joe. Sean made three times as many free throws as Kate. The three players made a total of 36 free throws.

How many free throws did each player make?

Show All Work

Kate _____ free throws

Joe _____ free throws

Sean _____ free throws

Exemplary Response:

- Kate: 8 free throws, Joe: 4 free throws, Sean: 24 free throws

Sample Process:

- Let Kate $= x$, Joe $= \frac{1}{2}x$, Sean $= 3x$

$$x + \frac{1}{2}x + 3x = 36$$

$$4.5x = 36$$

$$x = 8$$

$$\frac{1}{2}x = 4$$

$$3x = 24$$

Kate made 8, Joe made 4, Sean made 24

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation OR Correct values entered in incorrect order on the answer line
0 points	Other

Test 1—Question 3
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows correct answers of 8 free throws for Kate, 4 free throws for Joe, and 24 free throws for Sean. A correct complete process is shown but not required. The response receives a Score Point 2.

SCORE POINT 2

3 In a free throw contest, Kate made twice as many free throws as Joe. Sean made three times as many free throws as Kate. The three players made a total of 36 free throws.

How many free throws did each player make?

Show All Work

S = 3(2x)
K = 2x
J = x

36 = 6x + 2x + x
36 = 9x
4 = x

S = 3(2x)
S = 6x
S = 6(4)
S = 24

K = 2x
K = 3(4)
K = 8

J = x
J = 4

Kate 8 free throws

Joe 4 free throws

Sean 24 free throws

Test 1—Question 3
Score Point 1

This response shows the correct three values on the answer lines but in an incorrect order. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 In a free throw contest, Kate made twice as many free throws as Joe. Sean made three times as many free throws as Kate. The three players made a total of 36 free throws.

How many free throws did each player make?

Show All Work

Joe = x
Kate = 2x
Sean = 6x

$\frac{36}{9} = \frac{9x}{9}$

x = 4

Kate 4 free throws

Joe 8 free throws

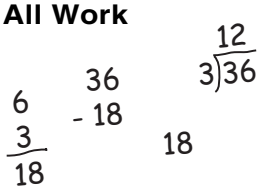
Sean 24 free throws

SCORE POINT 0

3 In a free throw contest, Kate made twice as many free throws as Joe. Sean made three times as many free throws as Kate. The three players made a total of 36 free throws.

How many free throws did each player make?

Show All Work



Kate twice as many as Joe
Sean made three times as many as Kate

Kate 12 free throws

Joe 6 free throws

Sean 18 free throws

Test 1—Question 3
Score Point 0

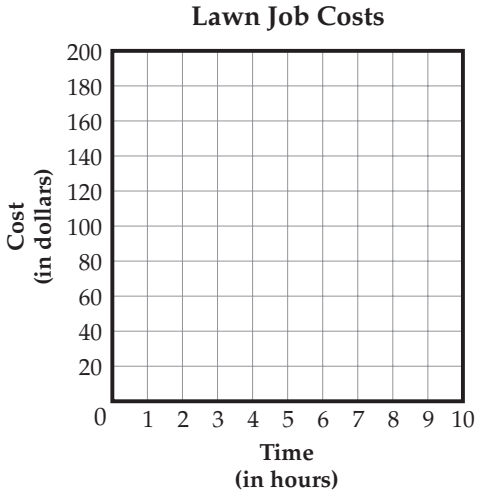
This response shows incorrect answers and an incorrect process. Therefore, this response receives a Score Point 0.

4 For a certain job, Tina's Yard Service charges \$25 an hour. For the same job, Nelson's Lawn and Tree charges \$10 per hour plus \$60.

The equations below can be used to determine the total charges (c) for the job to be done by the two companies as a function of the number of hours (h) it would take to finish.

Tina's Yard Service: $c = 25h$
Nelson's Lawn and Tree: $c = 10h + 60$

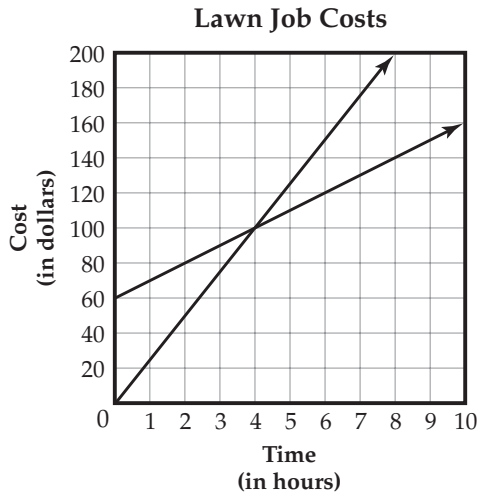
Graph the two equations on the coordinate plane below.



In approximately how many hours will Tina's Yard Service and Nelson's Lawn and Tree charge the same amount?

Answer _____ hours

Exemplary Response:

- 

AND

- 4 hours

OR

- Other valid estimation

NOTE: Award credit for correct interpretation of an incorrect graph.

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

Test 1—Question 4
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct graph of both lines and a correct answer of 4. The response receives a Score Point 2.

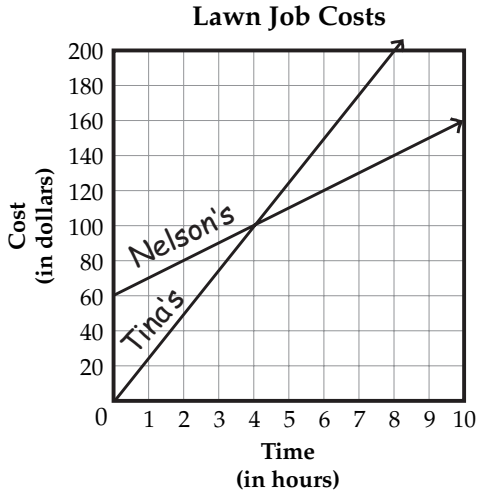
SCORE POINT 2

4 For a certain job, Tina's Yard Service charges $25 an hour. For the same job, Nelson's Lawn and Tree charges $10 per hour plus $60.

The equations below can be used to determine the total charges (c) for the job to be done by the two companies as a function of the number of hours (h) it would take to finish.

Tina's Yard Service: $c = 25h$
Nelson's Lawn and Tree: $c = 10h + 60$

Graph the two equations on the coordinate plane below.



In approximately how many hours will Tina's Yard Service and Nelson's Lawn and Tree charge the same amount?

Answer 4 hours

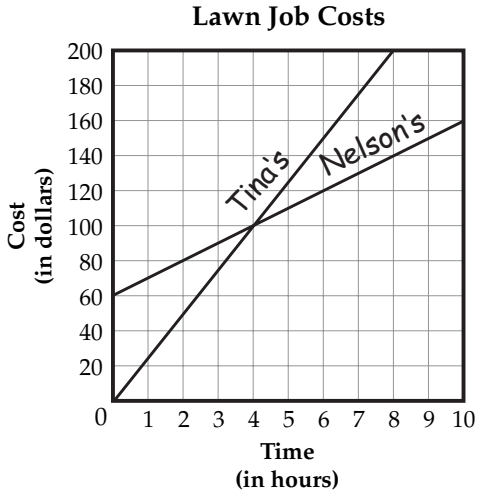
SCORE POINT 1

4 For a certain job, Tina's Yard Service charges \$25 an hour. For the same job, Nelson's Lawn and Tree charges \$10 per hour plus \$60.

The equations below can be used to determine the total charges (c) for the job to be done by the two companies as a function of the number of hours (h) it would take to finish.

Tina's Yard Service: $c = 25h$
Nelson's Lawn and Tree: $c = 10h + 60$

Graph the two equations on the coordinate plane below.



In approximately how many hours will Tina's Yard Service and Nelson's Lawn and Tree charge the same amount?

Answer 100 hours

Test 1—Question 4 Score Point 1

This response shows a correct graph of both lines, but an incorrect answer of 100 hours on the answer line. Therefore, this response receives a Score Point 1.

Test 1—Question 4
Score Point 0

This response shows an incorrect answer and no graph of either line. Therefore, this response receives a Score Point 0.

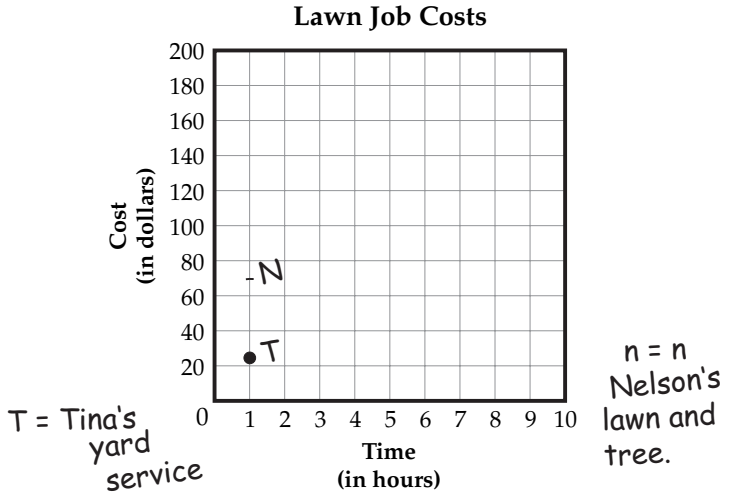
SCORE POINT 0

4 For a certain job, Tina's Yard Service charges $25 an hour. For the same job, Nelson's Lawn and Tree charges $10 per hour plus $60.

The equations below can be used to determine the total charges (c) for the job to be done by the two companies as a function of the number of hours (h) it would take to finish.

Tina's Yard Service: $c = 25h$
Nelson's Lawn and Tree: $c = 10h + 60$

Graph the two equations on the coordinate plane below.



In approximately how many hours will Tina's Yard Service and Nelson's Lawn and Tree charge the same amount?

Answer 2½ hours

Test 1—Question 5: Problem Solving

5 Look at the statement below.

"Only a triangle that has sides measuring 3 inches, 4 inches, and 5 inches will satisfy the Pythagorean theorem."

On the answer lines below, write the side lengths of a triangle that would be a counterexample to the given statement.

Show All Work

Side 1 _____ inches

Side 2 _____ inches

Side 3 _____ inches

On the lines below, state how many more counterexamples are required to PROVE that the given statement is false. Be sure to explain why you chose that number of counterexamples.

_____

_____

_____

_____

Exemplary Response:

- 6 inches, 8 inches, 10 inches

OR

- Any other set of lengths that satisfies the Pythagorean theorem

AND

- Correct complete process

Sample Process:

- $3 \times 2 = 6$

  $4 \times 2 = 8$

  $5 \times 2 = 10$

  $6^2 + 8^2 = 10^2$

OR

- Other valid process

AND

Explanation equivalent to the following:

- None, a statement cannot always be true if there is any example that proves it is false.

OR

- Other valid explanation

NOTE: Award credit for correct complete process, error in computation.

Rubric:

3 points	Exemplary response
2 points	Two correct components
1 point	One correct component
0 points	Other

SCORE POINT 3

5 Look at the statement below.

"Only a triangle that has sides measuring 3 inches, 4 inches, and 5 inches will satisfy the Pythagorean theorem."

On the answer lines below, write the side lengths of a triangle that would be a counterexample to the given statement.

Show All Work

$64 + 36 = 100$

$8^2 + 6^2 = 10^2$

1 4 9 16 25 36 48 64 81 100 121 144

Side 1 6 inches

Side 2 8 inches

Side 3 10 inches

On the lines below, state how many more counterexamples are required to PROVE that the given statement is false. Be sure to explain why you chose that number of counterexamples.

None, because only one counterexample is needed to prove the entire statement false.

Test 1—Question 5 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows correct answers of 6, 8, and 10, a correct complete process, and a correct explanation of how many more counterexamples are required to prove a statement false. The response receives a Score Point 3.

Test 1—Question 5
Score Point 2

This response shows a correct complete process and the correct answers but an incorrect explanation is given. The explanation is incorrect because the student does not explain how many more counterexamples are needed to prove a statement false. Therefore, this response receives a Score Point 2.

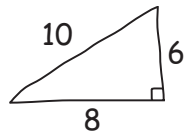
SCORE POINT 2

5 Look at the statement below.

"Only a triangle that has sides measuring 3 inches, 4 inches, and 5 inches will satisfy the Pythagorean theorem."

On the answer lines below, write the side lengths of a triangle that would be a counterexample to the given statement.

Show All Work



$a^2 + b^2 = c^2$
$3^2 + 4^2 = 5^2$
$9 + 16 = 25$
$25 = 25$

$6^2 + 8^2 = 10^2$
$36 + 64 = 100$
$100 = 100$

Side 1 6 inches

Side 2 8 inches

Side 3 10 inches

On the lines below, state how many more counterexamples are required to PROVE that the given statement is false. Be sure to explain why you chose that number of counterexamples.

I tryed a couple of numbers and none of them worked so I just multiplied the measurements by 2 and it worked.

SCORE POINT 1

5 Look at the statement below.

"Only a triangle that has sides measuring 3 inches, 4 inches, and 5 inches will satisfy the Pythagorean theorem."

On the answer lines below, write the side lengths of a triangle that would be a counterexample to the given statement.

Show All Work

Side 1 6 inches

Side 2 7 inches

Side 3 8 inches

On the lines below, state how many more counterexamples are required to PROVE that the given statement is false. Be sure to explain why you chose that number of counterexamples.

You only need one counterexample to prove a given statement false because, quite simply, it only takes one to prove it wrong. If you had more, it would just keep on proving it wrong.

Test 1—Question 5
Score Point 1

This response shows a correct explanation of how many more counterexamples are needed to prove a statement false. However, the student shows incorrect answers on the answer lines and no process. Therefore, this response receives a Score Point 1.

Test 1—Question 5
Score Point 0

This response shows incorrect answers, an incorrect process, and an incorrect explanation. Therefore, this response receives a Score Point 0.

SCORE POINT 0

5 Look at the statement below.

"Only a triangle that has sides measuring 3 inches, 4 inches, and 5 inches will satisfy the Pythagorean theorem."

On the answer lines below, write the side lengths of a triangle that would be a counterexample to the given statement.

Show All Work

$a^2 + b^2 = c^2$
$3^2 + 4^2 = 5^2$
$9 + 16 = 25$

Side 1 9 inches

Side 2 16 inches

Side 3 25 inches

On the lines below, state how many more counterexamples are required to PROVE that the given statement is false. Be sure to explain why you chose that number of counterexamples.

I just squared all of them.

Test 1—Question 6: Algebra and Functions

6 The equation below is written in standard form.

$$2x - 3y = 15$$

On the line below, write the equation in slope-intercept form.

Equation _____

On the lines below, explain how you would use the slope-intercept form to graph the line of the equation you wrote.

_____

_____

_____

_____

_____

Exemplary Response:

- $y = \frac{2}{3}x - 5$

AND

Explanation equivalent to the following:

- Plot the point (0, $^{-}$5). This is the *y*-intercept. Then go up 2 units and to the right 3 units and plot that point. Draw a line through the two points to make the graph.

OR

- Other valid explanation

NOTE: Award **one** point if a correct explanation is given based on an incorrect equation.

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

Test 1—Question 6
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct equation and a correct explanation of how to use the slope-intercept form to graph the line of the equation. The response receives a Score Point 2.

SCORE POINT 2

6 The equation below is written in standard form.

$2x - 3y = 15$

$-2x \quad -2x$

$\frac{-3y}{-3} = \frac{15}{-3} \quad \frac{-2x}{-3}$

$y = \frac{2}{3}x - 5$

On the line below, write the equation in slope-intercept form.

$y = mx + b$

Equation $y = \frac{2}{3}x - 5$

On the lines below, explain how you would use the slope-intercept form to graph the line of the equation you wrote.

your y intercept is -5. You find (0, -5) and graph it. Then you would go up two and to the right three. Again you would go up two and to the right three. Then you would draw a straight line through the points.

Test 1—Question 6
Score Point 1

This response shows a correct explanation. However, the student gives an incorrect equation of $y = \frac{-2}{3}x - 5$ instead of $y = \frac{2}{3}x - 5$. Therefore, this response receives a Score Point 1.

SCORE POINT 1

6 The equation below is written in standard form.

$2x - 3y = 15$

On the line below, write the equation in slope-intercept form.

Equation $y = -2/3x - 5$

On the lines below, explain how you would use the slope-intercept form to graph the line of the equation you wrote.

In the equation y = mx + b, m equals the slope of the line and b equals the y-intercept of the line. So, you'd go to (0, -5) and put a dot. From that dot, move down two spaces and right three and put a dot. Then draw a line connecting the dots.

SCORE POINT 0

6 The equation below is written in standard form.

$$2x - 3y = 15$$

On the line below, write the equation in slope-intercept form.

Equation y = 2x + 12

On the lines below, explain how you would use the slope-intercept form to graph the line of the equation you wrote.

On the x-axis go over two and then up one. Make a point. Then go over two and up twelve. Make a point. Last go over two and up twelve and make a third point. connect the three points

Test 1—Question 6
Score Point 0

This response shows an incorrect equation and an incorrect explanation. Therefore, this response receives a Score Point 0.

Test 1—Question 7: Algebra and Functions

7 Elberta paid a total of \$16 for 12 pounds of tangerines and 8 pounds of bananas. The price per pound of tangerines was twice the price per pound of bananas.

If x represents the price per pound of tangerines and y represents the price per pound of bananas, then the system of equations shown below could be used to find the price per pound of each.

$$12x + 8y = 16$$
$$x = 2y$$

Solve the system to find the price per pound of tangerines and bananas.

Show All Work

Answer \$ _____ per pound for tangerines, \$ _____ per pound for bananas

Exemplary Response:

- \$1.00 per pound for tangerines
  \$0.50 per pound for bananas

Sample Process:

- $12(2y) + 8y = 16$
  $24y + 8y = 16$
  $32y = 16$
  $y = 0.50$
  $x = 2y = 1.00$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

7 Elberta paid a total of $16 for 12 pounds of tangerines and 8 pounds of bananas. The price per pound of tangerines was twice the price per pound of bananas.

If x represents the price per pound of tangerines and y represents the price per pound of bananas, then the system of equations shown below could be used to find the price per pound of each.

$$\begin{aligned} 12x + 8y &= 16 \\ x &= 2y \end{aligned}$$

Solve the system to find the price per pound of tangerines and bananas.

Show All Work

12x + 8y = 16
x = 2y
12•(2y) + 8y = 16
24y + 8y = 16
$\frac{32y}{32} = \frac{16}{36}$ [y = .5]

32)16.0 = 0.5
0
160
160
000

32 × 5 = 1.0

y = .5
x = 2y
x = 2•(.5)
[x = 1]

2 × .5 = 1.0

8 × .5 = 4.0

12•(1) + 8•(.5) = 16
12•4 = 16
16 = 16

(x = price per pound of tangerines = 1)

(y = price per pound of bannanas = .5)

Answer $ 1 per pound for tangerines, $ .50 per pound for bananas

Test 1—Question 7
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answers of $1.00 per pound for tangerines and $0.50 per pound for bananas. A correct complete process is shown but not required. The response receives a Score Point 2.

Test 1—Question 7
Score Point 1

This response shows a correct complete process. However, a computational error is made that results in incorrect answers. The error is made when adding 24*y* and 8*y* to get 34*y* instead of 32*y*. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 Elberta paid a total of $16 for 12 pounds of tangerines and 8 pounds of bananas. The price per pound of tangerines was twice the price per pound of bananas.

If x represents the price per pound of tangerines and y represents the price per pound of bananas, then the system of equations shown below could be used to find the price per pound of each.

$$12x + 8y = 16$$
$$x = 2y$$

Solve the system to find the price per pound of tangerines and bananas.

Show All Work

$\frac{8}{17}$

$12(2y) + 8y = 16$
$24y + 8y = 16$
$\frac{34y}{34} = \frac{16}{34}$
$y = 0.47$

0.47
2
0.94

0.47
× 17
329
47
7.99

0.470
17 | 8.000
68
120
119
10

Answer $ 0.94 per pound for tangerines, $ 0.47 per pound for bananas

SCORE POINT 0

7 Elberta paid a total of $16 for 12 pounds of tangerines and 8 pounds of bananas. The price per pound of tangerines was twice the price per pound of bananas.

If x represents the price per pound of tangerines and y represents the price per pound of bananas, then the system of equations shown below could be used to find the price per pound of each.

$$12x + 8y = 16$$
$$x = 2y$$

Solve the system to find the price per pound of tangerines and bananas.

Show All Work

1
16
2
32

12 x 24 = 24y + 8y = 16

2
16/32
32
0

32

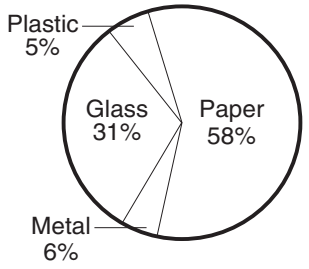
Answer $ 2 per pound for tangerines, $ 1 per pound for bananas

Test 1—Question 7
Score Point 0

This response shows incorrect answers and an incorrect process. Therefore, this response receives a Score Point 0.

8 The graph below shows a breakdown of the type of garbage collected from homes in Eastern.

Eastern Garbage Collection
(percent, by weight)



The data in this graph represent 14,500 tons of garbage.

What is the total weight, in tons, of plastic and metal collected?

Show All Work

Answer _____ tons

Exemplary Response:

- 1,595 tons

Sample Process:

- $0.05 + 0.06 = 0.11$

  So

  $14{,}500 \times 0.11 = 1{,}595$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

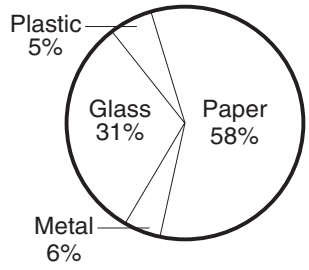
Test 1—Question 8
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 1,595 tons. A correct complete process is shown but not required. The response receives a Score Point 2.

SCORE POINT 2

8 The graph below shows a breakdown of the type of garbage collected from homes in Eastern.

Eastern Garbage Collection
(percent, by weight)



The data in this graph represent 14,500 tons of garbage.

What is the total weight, in tons, of plastic and metal collected?

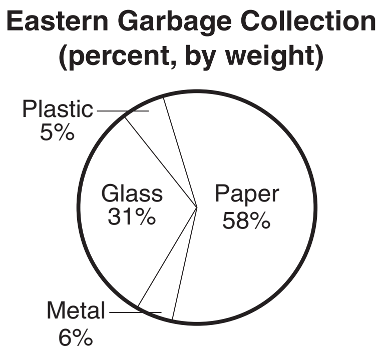
Show All Work

$$\begin{array}{r} 14500 \\ \times \quad .11 \\ \hline 14500 \\ 145000 \\ \hline 1595.00 \end{array}$$

Answer 1,595 tons

SCORE POINT 1

8 The graph below shows a breakdown of the type of garbage collected from homes in Eastern.



The data in this graph represent 14,500 tons of garbage.

What is the total weight, in tons, of plastic and metal collected?

Show All Work

```
 2 2              2 3
 14,500           14,500        metal - 870 tons
x   .05          x   .06        Plastic - 705 tons
-------          -------        ------------------
  70500            87000             1575
 000000           000000
-------          -------
0705.00          0870.00
```

Answer 1575 tons

Test 1—Question 8
Score Point 1

This response shows a correct complete process with a computational error that results in an incorrect answer. The error is made when the student multiplies 14,500 and 0.05 to get 705 instead of 725. Therefore, this response receives a Score Point 1.

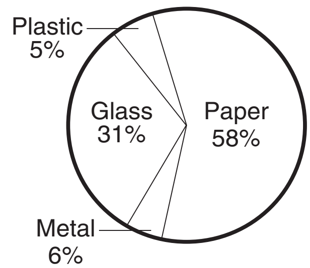
Test 1—Question 8
Score Point 0

This response shows an incorrect answer and an incorrect process. The student subtracts instead of multiplying. Therefore, this response receives a Score Point 0.

SCORE POINT 0

8 The graph below shows a breakdown of the type of garbage collected from homes in Eastern.

Eastern Garbage Collection
(percent, by weight)



The data in this graph represent 14,500 tons of garbage.

What is the total weight, in tons, of plastic and metal collected?

Show All Work

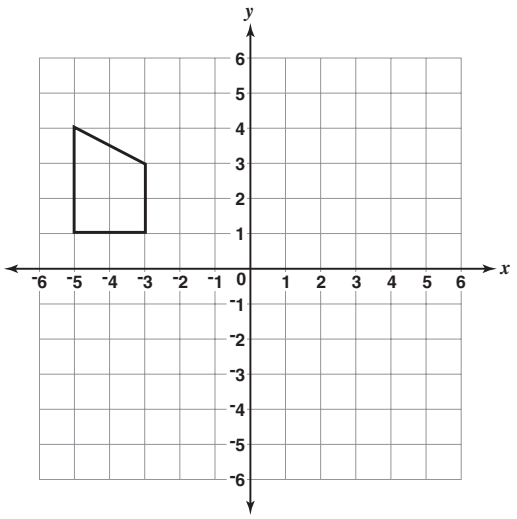
  4 9 1
14,~~5~~~~0~~0
\-   .11
144.89

%.11

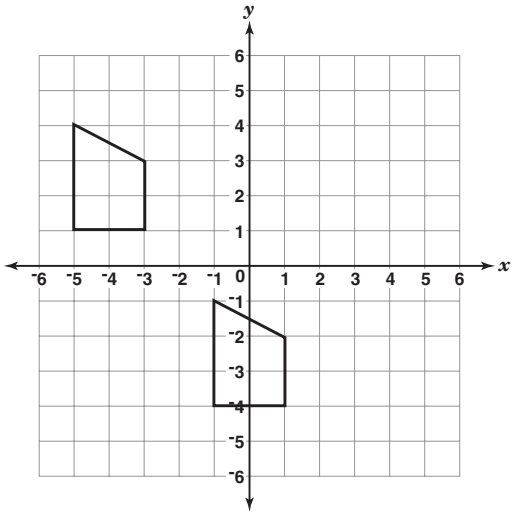
Answer 144.89 tons

Test 2—Question 1: Geometry

1 Draw the figure on the coordinate plane below after a translation of 5 units down and 4 units to the right.



Exemplary Response:

- 

Rubric:

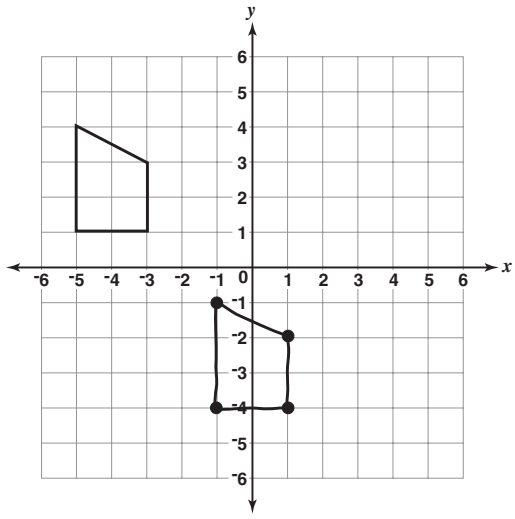
2 points	Exemplary response
1 point	One correct shift
0 points	Other

Test 2—Question 1
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct translation of 5 units down and 4 units to the right. The response receives a Score Point 2.

SCORE POINT 2

1 Draw the figure on the coordinate plane below after a translation of 5 units down and 4 units to the right.

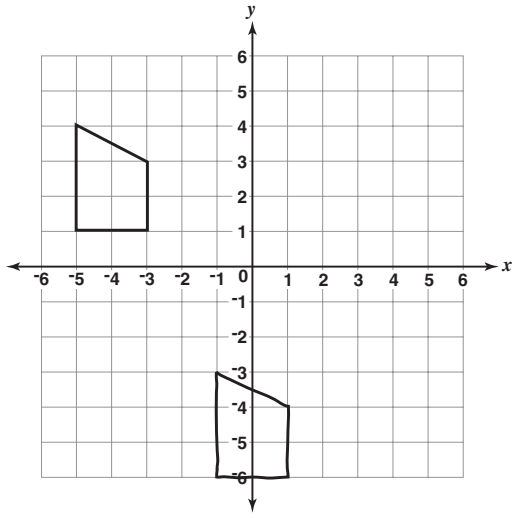


Test 2—Question 1
Score Point 1

This response shows a correct translation of 4 units to the right but an incorrect translation of 5 units down. Therefore, this response receives a Score Point 1.

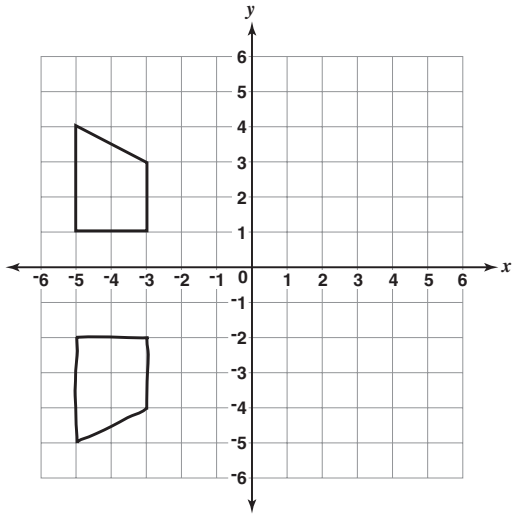
SCORE POINT 1

1 Draw the figure on the coordinate plane below after a translation of 5 units down and 4 units to the right.



SCORE POINT 0

1 Draw the figure on the coordinate plane below after a translation of 5 units down and 4 units to the right.

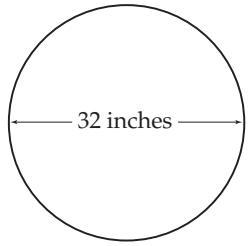


Test 2—Question 1
Score Point 0

This response shows no translations. Instead, the student shows a reflection. Therefore, this response receives a Score Point 0.

Test 2—Question 2: Measurement

2 Naomi cut out a circular sign with a diameter of 32 inches, as shown in the diagram below.



What is the area, in square inches, of the sign?

Show All Work

Answer _____ square inches

Exemplary Response:

- 803.84 square inches

Sample Process:

- $A = \pi r^2$

  $A = 3.14(16)^2$

  $A = 803.84$

OR

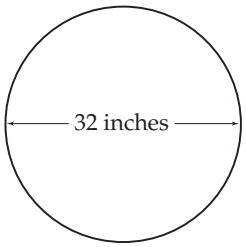
- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

2 Naomi cut out a circular sign with a diameter of 32 inches, as shown in the diagram below.



What is the area, in square inches, of the sign?

Show All Work

$\pi r^2 =$
$\pi 16^2 =$
$\pi 256 = 803.84$

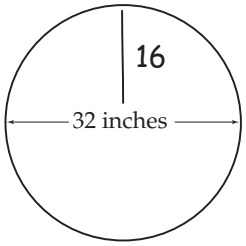
Answer 803.84 square inches

Test 2—Question 2 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct answer of 803.84 square inches. A correct complete process is shown but not required. The response receives a Score Point 2.

SCORE POINT 1

2 Naomi cut out a circular sign with a diameter of 32 inches, as shown in the diagram below.



$\frac{32}{2} = 16$

$r = 16$

What is the area, in square inches, of the sign?

Show All Work

$A = \pi r^2$
$A = 3.14 \cdot 16^2$
$A = 3.14 \ \ 252$
$A = 791.28$

Answer 791.28 square inches

Test 2—Question 2 Score Point 1

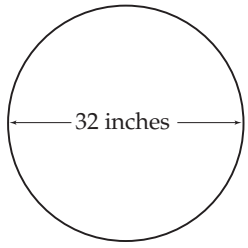
This response shows a correct complete process, but a computational error is made resulting in an incorrect answer. The computational error is made when the student multiplies 16 and 16, to get 252 instead of 256. Therefore, this response receives a Score Point 1.

Test 2—Question 2
Score Point 0

This response shows an incorrect process resulting in an incorrect answer. The student determines the circumference instead of the area. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2 Naomi cut out a circular sign with a diameter of 32 inches, as shown in the diagram below.



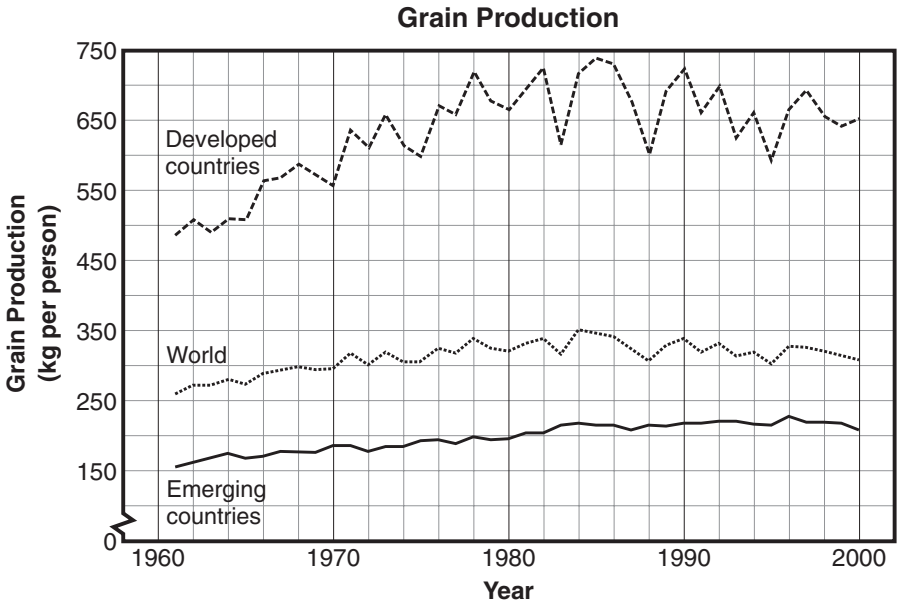
What is the area, in square inches, of the sign?

Show All Work

$A = \pi r^2 = \pi \times$ square of radius
$A = 3.14 \cdot 32$
$A = 100.48$

Answer 100.48 square inches

3 The graph below shows the world's grain production over a 40-year period.



Look at the following statement about the data in the graph.

"The rate of world grain production per person has declined since its peak in 1984. This is due to the decrease in grain production by the emerging countries."

On the lines below, explain which sentence in this statement is true and which sentence is false. Use data from the graph to justify your explanation.

Exemplary Response:

Explanations equivalent to the following;

- The first sentence is true because the high in 1984 was about 350 kilograms per person, and in 2000 it had declined to about 300 kilograms per person.

AND

- The second sentence is false because the production in emerging countries continued to rise after 1984 until about 1998 when it started to decline.

OR

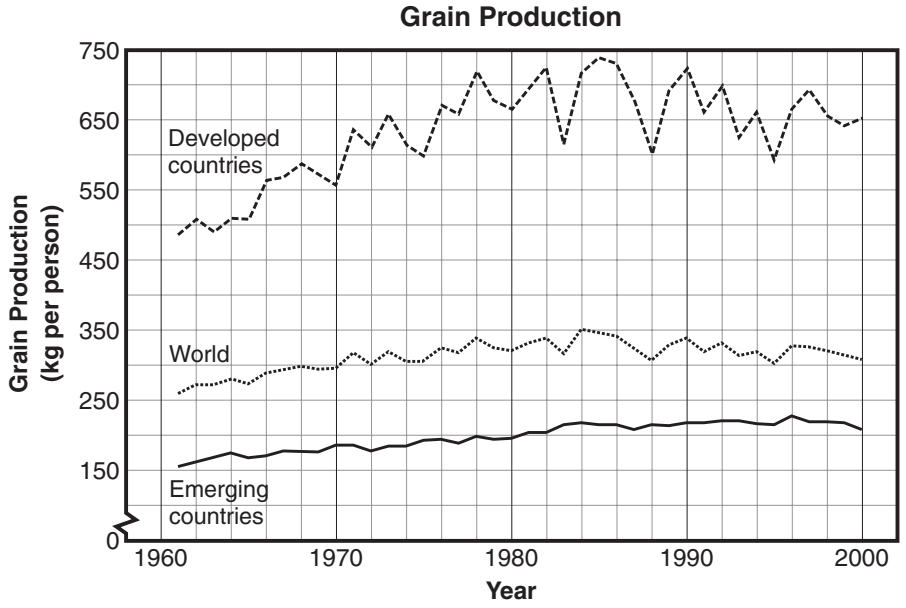
- Other valid student explanation

Rubric:

2 points	Exemplary response
1 point	Correctly identifies and justifies one statement OR Correctly identifies the true statement and the false statement
0 points	Other

SCORE POINT 2

3 The graph below shows the world's grain production over a 40-year period.



Look at the following statement about the data in the graph.

"The rate of world grain production per person has declined since its peak in 1984. This is due to the decrease in grain production by the emerging countries."

On the lines below, explain which sentence in this statement is true and which sentence is false. Use data from the graph to justify your explanation.

The first sentence is true. In 1984, 350 kg per person were produced. In 2000 it was down to about 300. The second sentence is false. The emerging countries had their peak in 1996 at about 225. They have had steady increase over years, not decrease.

Test 2—Question 3
Score Point 2

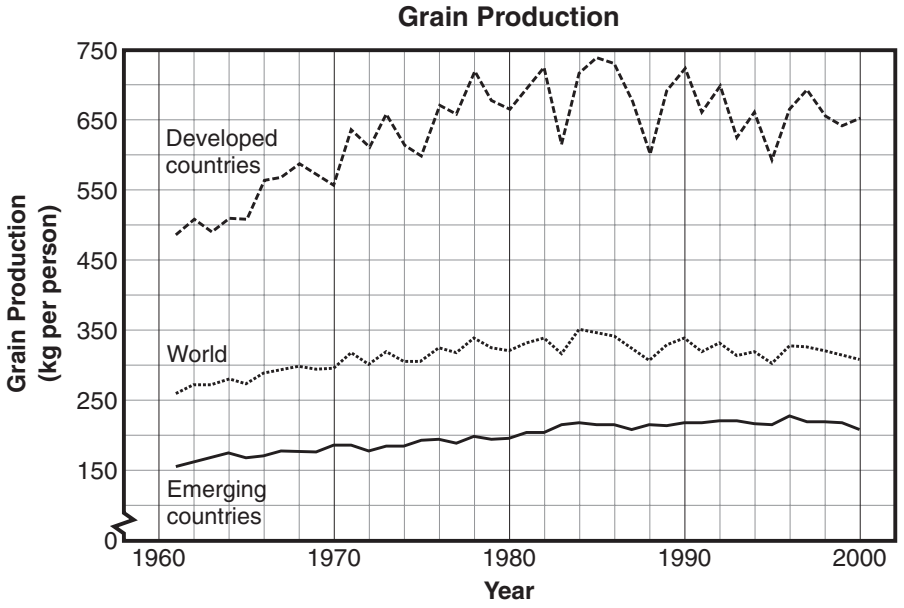
This response matches the exemplary response contained in the rubric. The student gives correct explanations with justifications of which sentence is true and which sentence is false in the statement. The response receives a Score Point 2.

Test 2—Question 3
Score Point 1

This response shows the true and false statements correctly identified, but no justification is given. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 The graph below shows the world's grain production over a 40-year period.



Look at the following statement about the data in the graph.

"The rate of world grain production per person has declined since its peak in 1984. This is due to the decrease in grain production by the emerging countries."

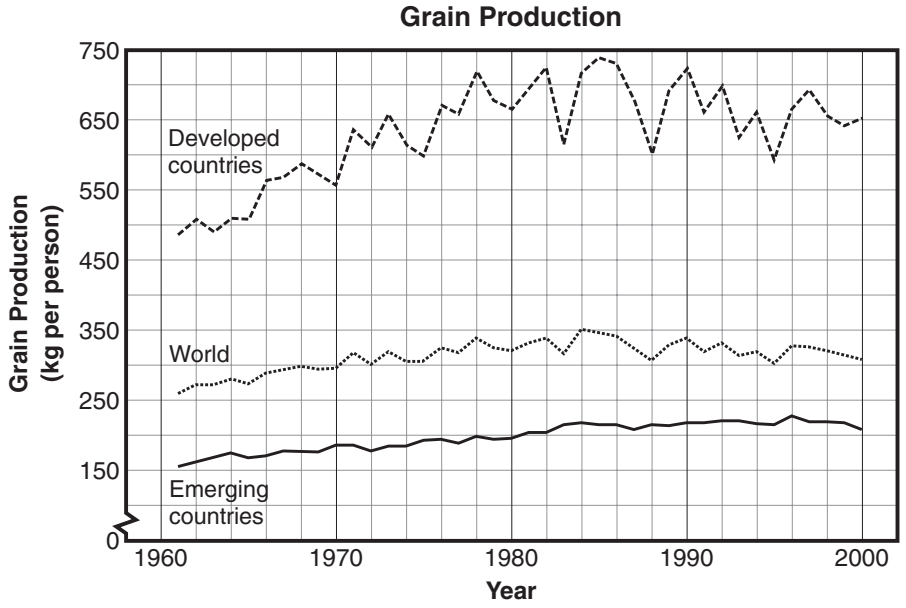
On the lines below, explain which sentence in this statement is true and which sentence is false. Use data from the graph to justify your explanation.

The rate of world grain production per person has declined since its peak in 1984- is true.

This is due to the decrease in grain production by the emerging countries- false.

SCORE POINT 0

3 The graph below shows the world's grain production over a 40-year period.



Look at the following statement about the data in the graph.

"The rate of world grain production per person has declined since its peak in 1984. This is due to the decrease in grain production by the emerging countries."

On the lines below, explain which sentence in this statement is true and which sentence is false. Use data from the graph to justify your explanation.

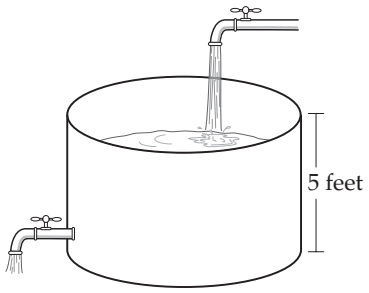
The rate of world grain production per person has declined since its peak in 1984, true.

Test 2—Question 3
Score Point 0

This response shows a correct identification of the first sentence in the statement as true but does not give a justification using data from the graph. The student does not identify the second sentence in the statement as being true or false. Therefore, this response receives a Score Point 0.

Test 2—Question 4: Problem Solving

4 The cylindrical water tank below is 5 feet high and holds 1,000 gallons when full.



The tank is $\frac{3}{5}$ full and water is running into the tank at a rate of 3 gallons per minute. Water is also running out of the tank at $4\frac{2}{3}$ gallons per minute. What is the depth, in feet, of the water in the tank after 2 hours?

Show All Work

Answer _____ feet

Exemplary Response:

- 2 feet

AND

- Correct complete process

Sample Process:

- $(\frac{3}{5})(1{,}000) = 600$ gallons; $(\frac{3}{5})(5) = 3$ feet

  $4\frac{2}{3} - 3 = 1\frac{2}{3}$ gallons per minute

  $(1\frac{2}{3})(120) = 200$ gallons ran out

  $600 - 200 = 400$ gallons left

  $\frac{600}{3} = \frac{400}{x}$

  $x = 2$ feet deep

OR

- Other valid process

Rubric:

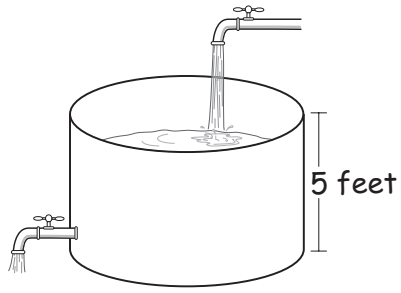
3 points	Exemplary response
2 points	Correct complete process; error in computation
1 point	Correct answer only OR Correct process for going one step beyond determining 360 and 560 gallons
0 points	Other

Test 2—Question 4
Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct answer of 2 feet and shows a correct complete process. The response receives a Score Point 3.

SCORE POINT 3

4 The cylindrical water tank below is 5 feet high and holds 1,000 gallons when full.



The tank is $\frac{3}{5}$ full and water is running into the tank at a rate of 3 gallons per minute. Water is also running out of the tank at $4\frac{2}{3}$ gallons per minute. What is the depth, in feet, of the water in the tank after 2 hours?

Show All Work

$\frac{3}{5} = \frac{x}{1000}$

$3000 = 5x$

$x = 600$

$3(60)(2) = 360$ gal.

$\frac{14}{3}\left(\frac{60}{1}\right) = 280(2) = 560$

$(600 + 360) - 560 = 400$ gal.

$\frac{x}{5} = \frac{400}{1000}$

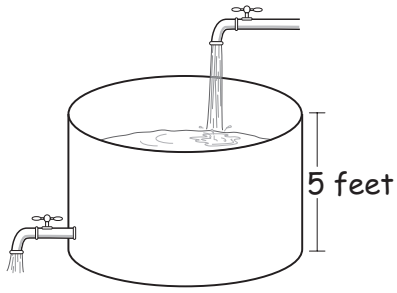
$1000x = 2000$

$x = 2$ ft

Answer 2 feet

SCORE POINT 2

4 The cylindrical water tank below is 5 feet high and holds 1,000 gallons when full.



The tank is $\frac{3}{5}$ full and water is running into the tank at a rate of 3 gallons per minute. Water is also running out of the tank at $4\frac{2}{3}$ gallons per minute. What is the depth, in feet, of the water in the tank after 2 hours?

Show All Work

in out

$\frac{3 \text{ gallon}}{1 \text{ min}}$ $\frac{4\frac{2}{3} g}{1 \text{ min}}$

$\frac{3}{5} - 1{,}000 = 600$ gallons

$\frac{340 \cancel{g}}{1} \cdot \frac{5 \text{ ft}}{1000 \cancel{g}} = 1.7$ ft

$\frac{120 \text{ min}}{1} \cdot \frac{3 g}{1 \text{ m}} = 300$ gallons + 600 g = 900 gallons

$\frac{120 \text{ min}}{1} \cdot \frac{14 g}{3 \text{ m}} = 560$ gallons

900 g
−560 g
340 gallons

Answer 1.7 feet

Test 2—Question 4 Score Point 2

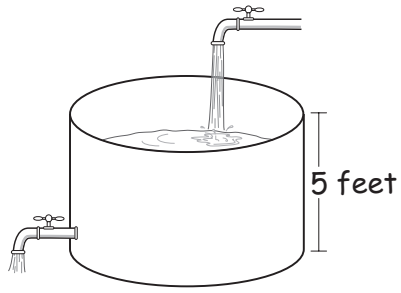
This response shows a correct complete process. However, a computational error is made that results in an incorrect answer. The error occurs when the student multiplies 120 and 3 to get 300 instead of 360. Therefore, this response receives a Score Point 2.

Test 2—Question 4
Score Point 1

This response shows an incorrect answer and an incomplete process. The student correctly determines the amount of water in the tank at the start and the amount of water that ran in and ran out during 2 hours. The student then determines the net loss of water in gallons but does not determine the final depth of the water. Therefore, this response receives a Score Point 1.

SCORE POINT 1

4 The cylindrical water tank below is 5 feet high and holds 1,000 gallons when full.



The tank is $\frac{3}{5}$ full and water is running into the tank at a rate of 3 gallons per minute. Water is also running out of the tank at $4\frac{2}{3}$ gallons per minute. What is the depth, in feet, of the water in the tank after 2 hours?

Show All Work

$1{,}000 \div 5 = 200$

$\frac{3}{5} \cdot 200 = 600$ ft

2hrs. = 120 mins.

360 gallons

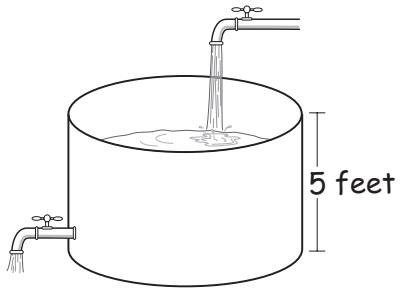
$4.6 \cdot 120 = 559.99$

$\frac{14}{3} \cdot 120$ $\frac{360}{199.99}$

Answer 199.99 feet

SCORE POINT 0

4 The cylindrical water tank below is 5 feet high and holds 1,000 gallons when full.



The tank is $\frac{3}{5}$ full and water is running into the tank at a rate of 3 gallons per minute. Water is also running out of the tank at $4\frac{2}{3}$ gallons per minute. What is the depth, in feet, of the water in the tank after 2 hours?

Show All Work

$$3 - 4\tfrac{2}{3} \qquad -1\tfrac{2}{3} + \tfrac{3}{8} = \tfrac{5}{8} = \tfrac{.625}{5}$$

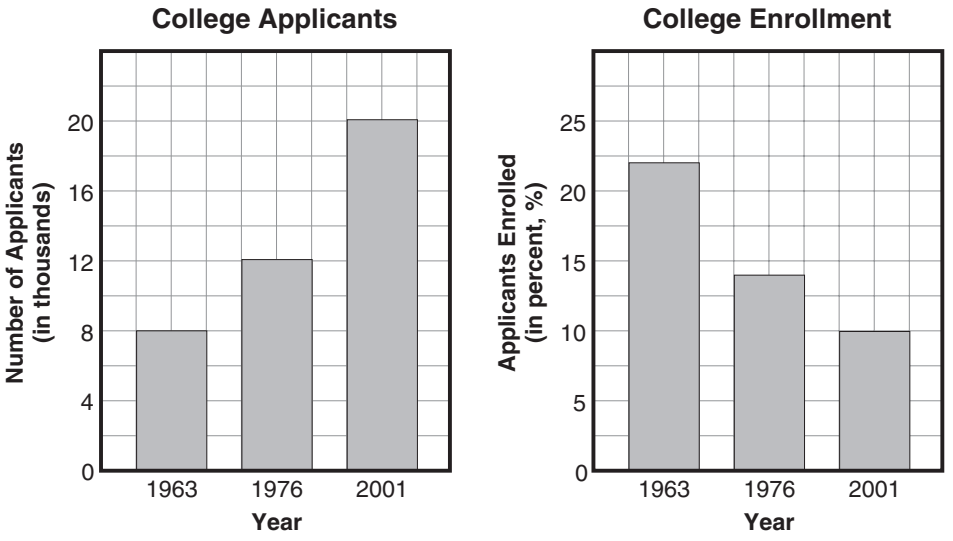
Answer .125 feet

Test 2—Question 4
Score Point 0

This response shows an incorrect answer and an incorrect process. Therefore, this response receives a Score Point 0.

Test 2—Question 5: Problem Solving

5 The two graphs below show the number of people that applied for enrollment at Summer College, and the percentage of the applicants that actually enrolled during three different years.



Alina claims the number of students enrolled in 2001 was greater than the number of students enrolled in either 1963 or 1976.

On the lines below, explain why she is either correct or incorrect. Be sure to include the approximate number of people enrolled for each year in your explanation.

Exemplary Response:

Explanation equivalent to the following:

- The claim is correct. In 1963 there were 8,000 applicants and 22% of the applicants enrolled. That is about 1,760 students. In 1976 there were 12,000 applicants and 14% of the applicants enrolled. That is about 1,680 students. In 2001 there were about 20,000 applicants and 10% of the applicants enrolled. That is about 2,000 students.

OR

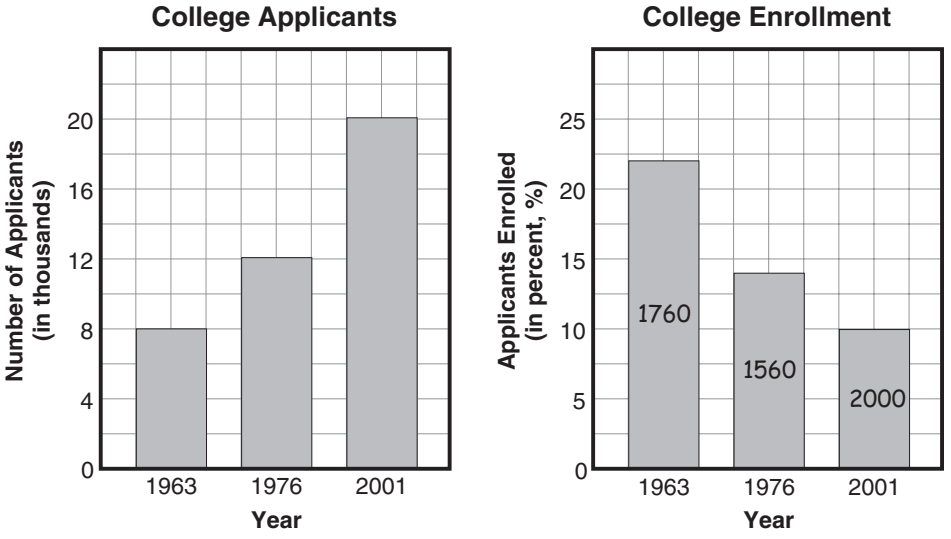
- Other valid explanation

Rubric:

2 points	Exemplary response
1 point	Correct conclusion based on a computational error
0 points	Other

SCORE POINT 2

5 The two graphs below show the number of people that applied for enrollment at Summer College, and the percentage of the applicants that actually enrolled during three different years.



Alina claims the number of students enrolled in 2001 was greater than the number of students enrolled in either 1963 or 1976.

On the lines below, explain why she is either correct or incorrect. Be sure to include the approximate number of people enrolled for each year in your explanation.

She is correct, because in 1963, ~ 22% of 8000 applicants were enrolled which is about 1760 students. In 1976, 13% of 12,000 applicants were enrolled, which is about 1560 students. In 2001, 10% of 20,000 applicants were enrolled, which is 2000. That's more than the other 2 years individually.

Test 2—Question 5
Score Point 2

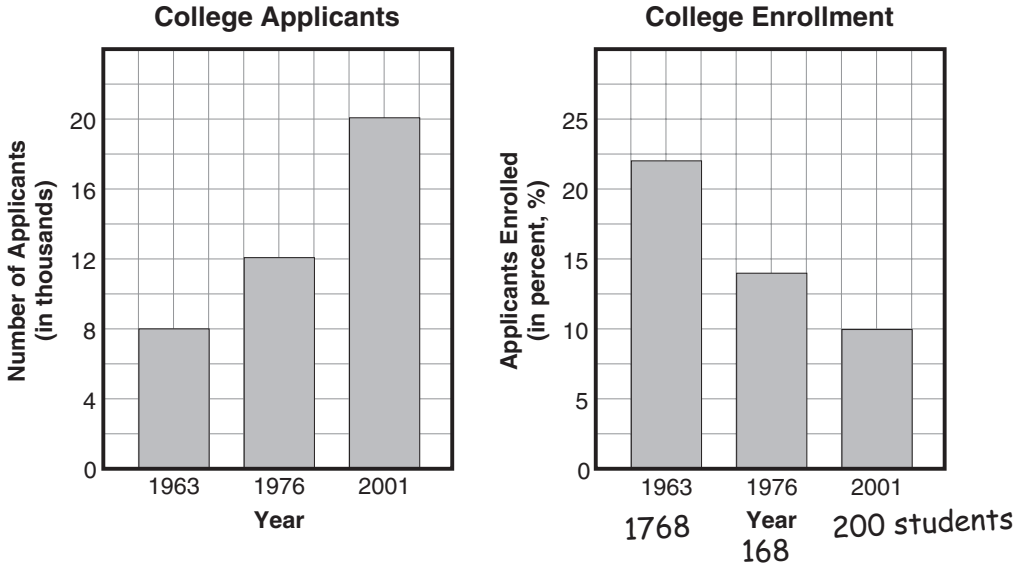
This response matches the exemplary response contained in the rubric. The student shows a correct explanation with correct justification based on the given data. The response receives a Score Point 2.

Test 2—Question 5
Score Point 1

This response shows an explanation with a correct conclusion based on incorrectly computed values of the number of students enrolled. Therefore, this response receives a Score Point 1.

SCORE POINT 1

5 The two graphs below show the number of people that applied for enrollment at Summer College, and the percentage of the applicants that actually enrolled during three different years.



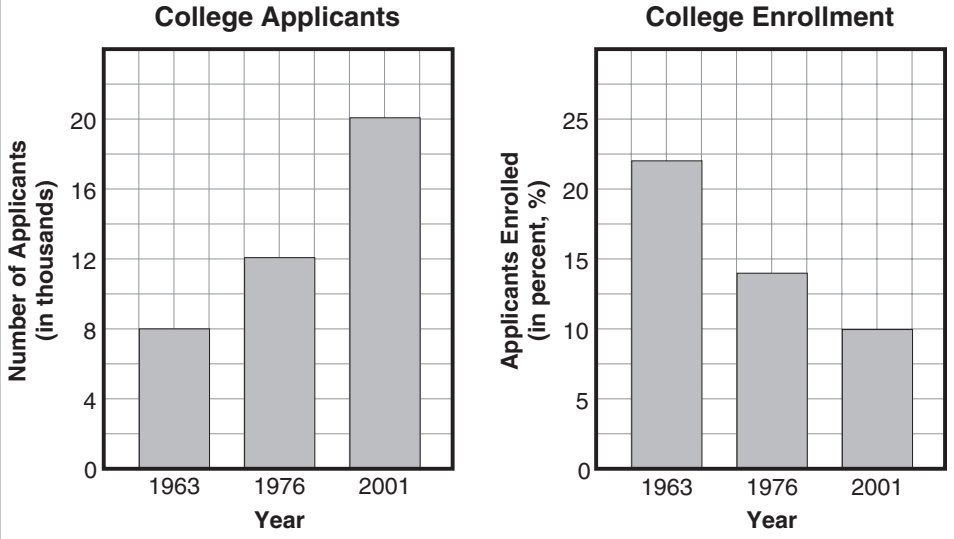
Alina claims the number of students enrolled in 2001 was greater than the number of students enrolled in either 1963 or 1976.

On the lines below, explain why she is either correct or incorrect. Be sure to include the approximate number of people enrolled for each year in your explanation.

She is wrong because 2001 had the most applicants but NOT the most students. In 2001 there were 200 students, in 1976 there were 168 students, in 1963 there were 1,768 students enrolled.

SCORE POINT 0

5 The two graphs below show the number of people that applied for enrollment at Summer College, and the percentage of the applicants that actually enrolled during three different years.



Alina claims the number of students enrolled in 2001 was greater than the number of students enrolled in either 1963 or 1976.

On the lines below, explain why she is either correct or incorrect. Be sure to include the approximate number of people enrolled for each year in your explanation.

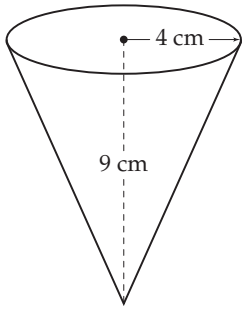
She's correct, in 1963 there were only 8,000 and then in 1976 it went up to 12,000 but in 2001 it went all the way up to 20,000 nearly doubeling the amount 1976. 2001 had the amount that you'd get if you put 1963 and 1976 together.

Test 2—Question 5
Score Point 0

This response shows an incorrect explanation with an incorrect justification. The student restates information from the "Applicants" graph and does not use any data from the "Enrollment" graph. Therefore, this response receives a Score Point 0.

Test 2—Question 6: Measurement

6 The cone below is filled to the top with crushed ice.



How many cubic centimeters of crushed ice are in the cone?

Show All Work

Answer _____ cubic centimeters

Exemplary Response:

- 150.72 cubic centimeters

Sample Process:

- $V = [3.14(4^2)(9)] \div 3 = 150.72$

OR

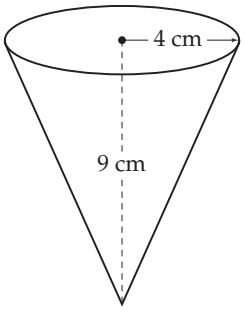
- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

6 The cone below is filled to the top with crushed ice.



How many cubic centimeters of crushed ice are in the cone?

Show All Work

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}(3.14)(4)^2(9)$

$V = \frac{1}{3}(3.14)(16)(9)$

$V = \frac{1}{3}(452.16)$

$V = 150.72$

Answer 150.72 cubic centimeters

Test 2—Question 6
Score Point 2

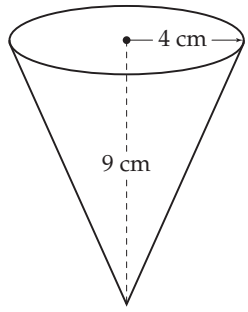
This response matches the exemplary response contained in the rubric. The student shows a correct answer of 150.72 cubic centimeters. A correct complete process is shown but not required. The response receives a Score Point 2.

Test 2—Question 6
Score Point 1

This response shows a correct complete process, but a computational error is made that results in an incorrect answer. The computational error occurs when the student multiplies $\frac{1}{3}$ and 452.16 to get 1,507.2 instead of 150.72. Therefore, this response receives a Score Point 1.

SCORE POINT 1

6 The cone below is filled to the top with crushed ice.



How many cubic centimeters of crushed ice are in the cone?

Show All Work

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}(3.14)(4)^2(9)$

$V = \frac{1}{3}(3.14)16(9)$

$V = \frac{1}{3}(3.14)144$

$V = \frac{1}{3}(452.16)$

$V = 1507.2$

1507.2
0.3)452.16
1

3.14
× 144
1256
12560
33400
452.16

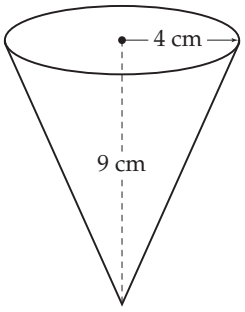
4 × 4 = 16

16 × 9 = 144

Answer 1507.2 cubic centimeters

SCORE POINT 0

6 The cone below is filled to the top with crushed ice.



How many cubic centimeters of crushed ice are in the cone?

Show All Work

$\frac{1}{3} = .3$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\ 3.14\ (4)^2\ 9$

$V = \frac{1}{3}\ (12.56)^2\ 9$

$V = \frac{1}{3}\ (3.54)\ 9$

$V = \frac{1}{3}\ (38)$

$V = 11.4$

Answer 11.4 cubic centimeters

Test 2—Question 6 Score Point 0

This response shows an incorrect process resulting in an incorrect answer. The student uses the incorrect order of operations by multiplying 4 and 3.14 instead of squaring 4 first. Therefore, this response receives a Score Point 0.

Test 2—Question 7: Problem Solving

7 

Cheryl is training for a long bicycle ride. Jim will drive Cheryl and her bicycle 60 miles from town, drop them off, and then drive back to town. Cheryl will then ride her bicycle back to town.

On the way back to town, Jim will travel at 50 miles per hour and Cheryl will travel at 15 miles per hour. Cheryl plans on making two 15-minute rest stops.

If Jim and Cheryl start back at the same time, how long, in hours and minutes, after Jim arrives in town will Cheryl arrive in town?

Show All Work

Answer _____ hours and _____ minutes

Exemplary Response:

- 3 hours and 18 minutes

AND

- Correct complete process

Sample Process:

- $60 \div 50 = 1.2$ (drive time)

  $60 \div 15 + 2(15) = 4.5$ (ride time)

  $4.5 - 1.2 = 3.3$

  $3 + (60)(0.3) = 3{:}18$

OR

- Other valid process

Rubric:

3 points	Exemplary response
2 points	Correct complete process; error in computation OR Correct answer only
1 point	Correct process for determining both times OR Correct process for finding time difference, but does not include the two 15-minute rest stops
0 points	Other

SCORE POINT 3

7 Cheryl is training for a long bicycle ride. Jim will drive Cheryl and her bicycle 60 miles from town, drop them off, and then drive back to town. Cheryl will then ride her bicycle back to town.

On the way back to town, Jim will travel at 50 miles per hour and Cheryl will travel at 15 miles per hour. Cheryl plans on making two 15-minute rest stops.

If Jim and Cheryl start back at the same time, how long, in hours and minutes, after Jim arrives in town will Cheryl arrive in town?

Show All Work

Jim – 60 miles
50/hr.

$\frac{60}{x} = \frac{50}{1}$

$\frac{60}{50} = \frac{50x}{50}$ = 1 hr. 12 min.

Cheryl – 60 miles
15/hr.

15 min
15 min } rest stops

$\frac{60}{x} = \frac{15}{1}$ $\frac{60}{15} = \frac{15x}{15}$ 4 hrs + 30 min.

4.5
-1.2
3.3

Answer 3 hours and 18 minutes

Test 2—Question 7 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct answer of 3 hours and 18 minutes and shows a correct complete process. The response receives a Score Point 3.

SCORE POINT 2

7 Cheryl is training for a long bicycle ride. Jim will drive Cheryl and her bicycle 60 miles from town, drop them off, and then drive back to town. Cheryl will then ride her bicycle back to town.

On the way back to town, Jim will travel at 50 miles per hour and Cheryl will travel at 15 miles per hour. Cheryl plans on making two 15-minute rest stops.

If Jim and Cheryl start back at the same time, how long, in hours and minutes, after Jim arrives in town will Cheryl arrive in town?

Show All Work

$50\overline{)60}$ $1\frac{1}{2}$ hrs

$15\overline{)60}$ 4 hrs + 30 minutes

$4\frac{1}{2}$
$-1\frac{1}{2}$
3

Answer 3 hours and 0 minutes

Test 2—Question 7 Score Point 2

This response shows a correct complete process. However, a computational error is made resulting in an incorrect answer. The error is made when the student divides 60 by 50 to get 1.5 instead of 1.2. Therefore, this response receives a Score Point 2.

Test 2—Question 7
Score Point 1

This response shows an incorrect process. The student correctly determines the time it will take Jim and Cheryl to arrive in town. However, the student does not complete the process by subtracting the times to determine how much longer it takes Cheryl to arrive. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 Cheryl is training for a long bicycle ride. Jim will drive Cheryl and her bicycle 60 miles from town, drop them off, and then drive back to town. Cheryl will then ride her bicycle back to town.

On the way back to town, Jim will travel at 50 miles per hour and Cheryl will travel at 15 miles per hour. Cheryl plans on making two 15-minute rest stops.

If Jim and Cheryl start back at the same time, how long, in hours and minutes, after Jim arrives in town will Cheryl arrive in town?

Show All Work

60 miles d = rt Jim
60 = 50t
1.2 hours

Cheryl
60 = 15t
2 15 min stops
4:30

$15\overline{)60}$ = 1.2

$15\overline{)60}$ = 4
4:00
15
15
+
4:30

Answer 4 hours and 30 minutes

Test 2—Question 7
Score Point 0

This response shows an incorrect answer and an incorrect process. Therefore, this response receives a Score Point 0.

SCORE POINT 0

7 Cheryl is training for a long bicycle ride. Jim will drive Cheryl and her bicycle 60 miles from town, drop them off, and then drive back to town. Cheryl will then ride her bicycle back to town.

On the way back to town, Jim will travel at 50 miles per hour and Cheryl will travel at 15 miles per hour. Cheryl plans on making two 15-minute rest stops.

If Jim and Cheryl start back at the same time, how long, in hours and minutes, after Jim arrives in town will Cheryl arrive in town?

Show All Work

t = rd
t = 15(60)
t = 4

t = rd
t = 50(60)
t = 1.2

Answer 3 hours and 30 minutes

Test 2—Question 8: Problem Solving

8 Leon is making a circular poster that has a diameter of 46 inches. The cardboard he would like to use is rectangular and has a width of 1 yard and a length of $1\frac{1}{4}$ yards. On the lines below, explain why it is not possible for Leon to use this piece of cardboard to make the poster. Be sure to justify your reasoning using measurements from both shapes.

What would be the minimum side length, in inches, of a SQUARE piece of cardboard that would allow Leon to make the poster?

Answer _____ inches

Exemplary Response:

Explanation equivalent to the following:

- It is not possible because the cardboard measures 36 inches by 45 inches. It has to be at least 46 inches by 46 inches because the diameter of the poster is 46 inches.

OR

- Other valid explanation

AND

- 46 inches

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

Test 2—Question 8
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct explanation and the correct answer. The response receives a Score Point 2.

SCORE POINT 2

8 Leon is making a circular poster that has a diameter of 46 inches. The cardboard he would like to use is rectangular and has a width of 1 yard and a length of $1\frac{1}{4}$ yards. On the lines below, explain why it is not possible for Leon to use this piece of cardboard to make the poster. Be sure to justify your reasoning using measurements from both shapes.

The cardboard is not long enough. If he used that piece of cardboard, the diameter could be no longer than 1 yard. 1 yard is 36 inches. He wanted the diameter to be 46 inches.

What would be the minimum side length, in inches, of a SQUARE piece of cardboard that would allow Leon to make the poster?

Answer 46 inches

Test 2—Question 8
Score Point 1

This response shows the correct answer but an incorrect explanation. The student does not justify the response by comparing the dimensions of the circle with those of the cardboard. Therefore, this response receives a Score Point 1.

SCORE POINT 1

8 Leon is making a circular poster that has a diameter of 46 inches. The cardboard he would like to use is rectangular and has a width of 1 yard and a length of $1\frac{1}{4}$ yards. On the lines below, explain why it is not possible for Leon to use this piece of cardboard to make the poster. Be sure to justify your reasoning using measurements from both shapes.

The sides of rectangle will come over the sides but not cover the whole circle. He needs a bigger piece of card board.

What would be the minimum side length, in inches, of a SQUARE piece of cardboard that would allow Leon to make the poster?

Answer 46 inches

SCORE POINT 0

8 Leon is making a circular poster that has a diameter of 46 inches. The cardboard he would like to use is rectangular and has a width of 1 yard and a length of $1\frac{1}{4}$ yards. On the lines below, explain why it is not possible for Leon to use this piece of cardboard to make the poster. Be sure to justify your reasoning using measurements from both shapes.

The cardboard wouldnot be long enough.

What would be the minimum side length, in inches, of a SQUARE piece of cardboard that would allow Leon to make the poster?

Answer 92. inches

Test 2—Question 8
Score Point 0

This response shows an incorrect explanation and an incorrect answer. Therefore, this response receives a Score Point 0.

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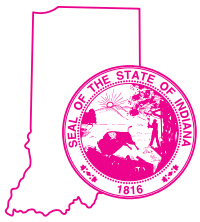

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